The NonHazCity story

Interreg
Baltic Sea Region

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SUSTAINABLE WATERS
NonHazCity 3

NONHAZCITY

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Introduction

The NonHaz City story by Heidrun Fammler
Baltic Environmental Forum NonHazCity deputy project manager
and the NonHazCity team.

Cities across the Baltic Sea Region are built from layers of history, policy, design and everyday decisions. Each building embodies materials chosen decades ago or yesterday, and with them the chemical legacies that shape the health, resilience and sustainability of urban life. NonHazCity3 emerged from the recognition that hazardous substances in construction are not a marginal issue but a defining challenge for the future. They influence indoor environments, complicate circularity, burden waste streams and create long-term obligations for municipalities, households and professionals alike.

This final story brings together the project's experience, expertise and lessons learned. Structured through nine interconnected scenes, it traces the journey from recognising the problem to envisioning a healthier built environment. The narrative spans the frustrations faced by municipal leaders when unexpected hazards emerge; the dilemmas of architects working with incomplete information; the need to translate complex knowledge into clear, usable guidance; and the practical steps required to implement safer material choices on real construction sites.

The story reflects the diversity of contexts and actors involved. Pilots across the region demonstrated that change is possible even under tight budgets and challenging conditions. Work with households showed how awareness and accessible communication empower people to make healthier choices. The project underscored the importance of supervision and verification, revealing how good intentions become reliable outcomes only when supported by consistent follow-up. It also presented a vision of a "Future City" where chemical safety, circularity and climate goals are aligned, and where transparent information supports long-term environmental and public health objectives.

Senior experts who have accompanied the NonHazCity process over many years offer their reflections in the final chapter. Their perspectives frame the project within a wider landscape of European policy, municipal leadership and market dynamics. They highlight both the progress achieved and the challenges that remain, emphasising the need for sustained cooperation and practical tools that bring clarity to complex issues.

This publication therefore serves not only as a documentation of results, but as a roadmap for continued action. It is an invitation to cities, professionals, citizens and policymakers to work together towards a toxfree, circular and climate-friendly building culture. The experience of NonHazCity3 shows that with transparency, consistency and collaboration, healthier buildings are not an aspiration but an achievable reality.

SCENE 1 — THE MAYOR'S PROBLEM

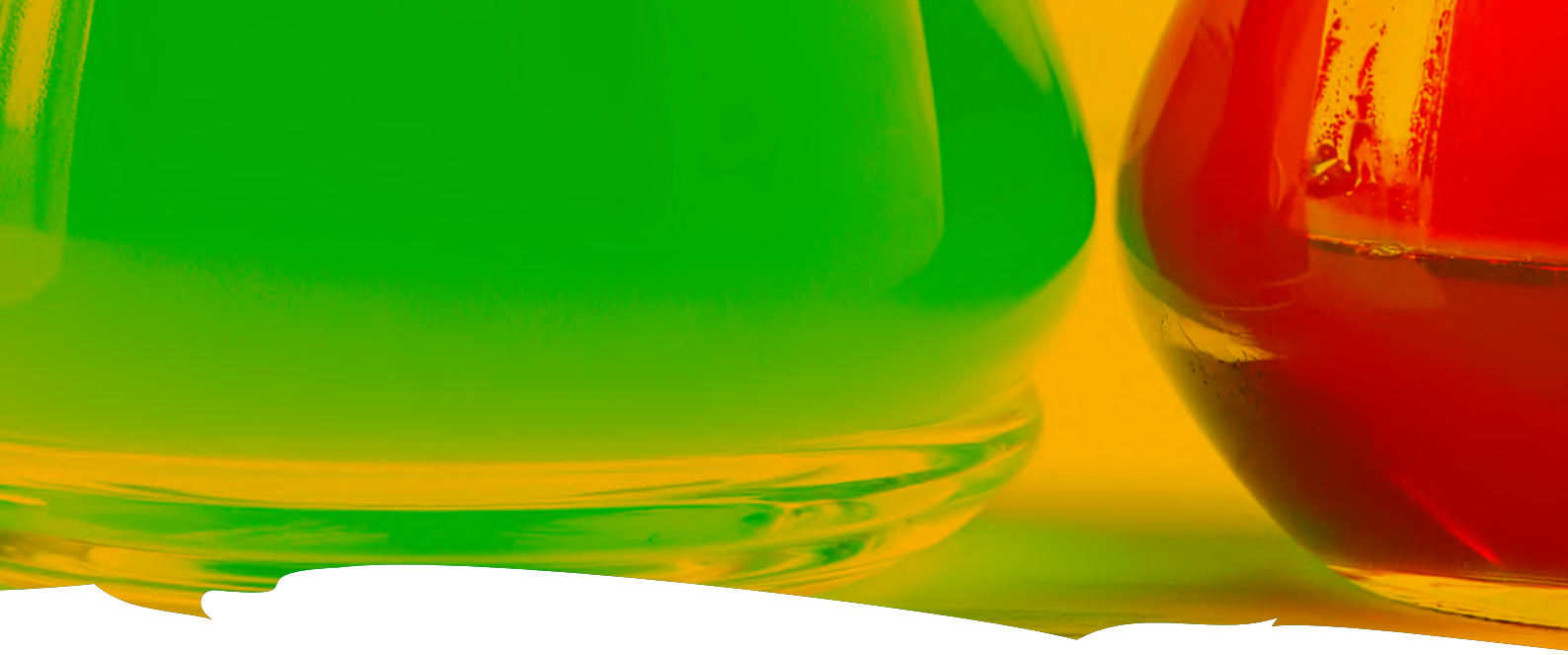
The story of NonHazCity3 begins in a place that is, at first glance, entirely familiar: a European city with a proud architectural heritage, ageing public buildings, and a growing awareness that the past lives on in unexpected and sometimes troubling ways. When a routine inspection reveals that a well-used municipal building must be closed because of hazardous substances, the situation feels both abrupt and strangely inevitable. Decades of construction practices, once viewed as progressive or simply ordinary, have left behind a chemical legacy that today's decision-makers must manage with little room for hesitation.

For the mayor, the discovery is more than a technical inconvenience. It is a reminder that a city's built environment is not static but layered - each renovation, each material choice, and each maintenance cycle leaving traces that shape the lives of residents. What once served as insulation, protection, or aesthetic enhancement may now pose risks to health, complicate future refurbishments, or undermine ambitions for climate neutrality and circularity. The building that stands before him is therefore not only a physical structure; it is a symbol of how long-term responsibility intersects with everyday governance.

As the mayor turns to his experts for explanations, he learns that hazardous substances are neither rare nor confined to outdated building stock. They are woven into paints, surface treatments, insulation foams, sealants, flooring, and coatings. Some were introduced decades ago and only now reveal their persistence; others are modern substitutes whose unintended effects are becoming clearer. The invisible nature of this problem is perhaps its most challenging aspect. Residents walk across treated flooring, breathe indoor air, or open windows to the street without ever knowing what substances circulate through their homes, schools, and workplaces.

The mayor's frustration grows not out of fear, but out of opacity. The information available to him is fragmented, inconsistent, or difficult to interpret even for trained professionals. While the city holds responsibility for its buildings, it rarely receives a complete picture of their chemical composition. The idea that a municipality could be expected to manage long-term risks without reliable knowledge about the materials it owns seems increasingly untenable. Yet this is the very situation in which many cities find themselves.

He is also confronted by the limits of regulation. Although national and European processes aim to safeguard residents from harmful substances, they evolve slowly. Scientific concern must turn into formal proposals, which must then navigate consultation, evaluation, and negotiation before restrictions eventually come into force. This measured pace, while appropriate for leg-

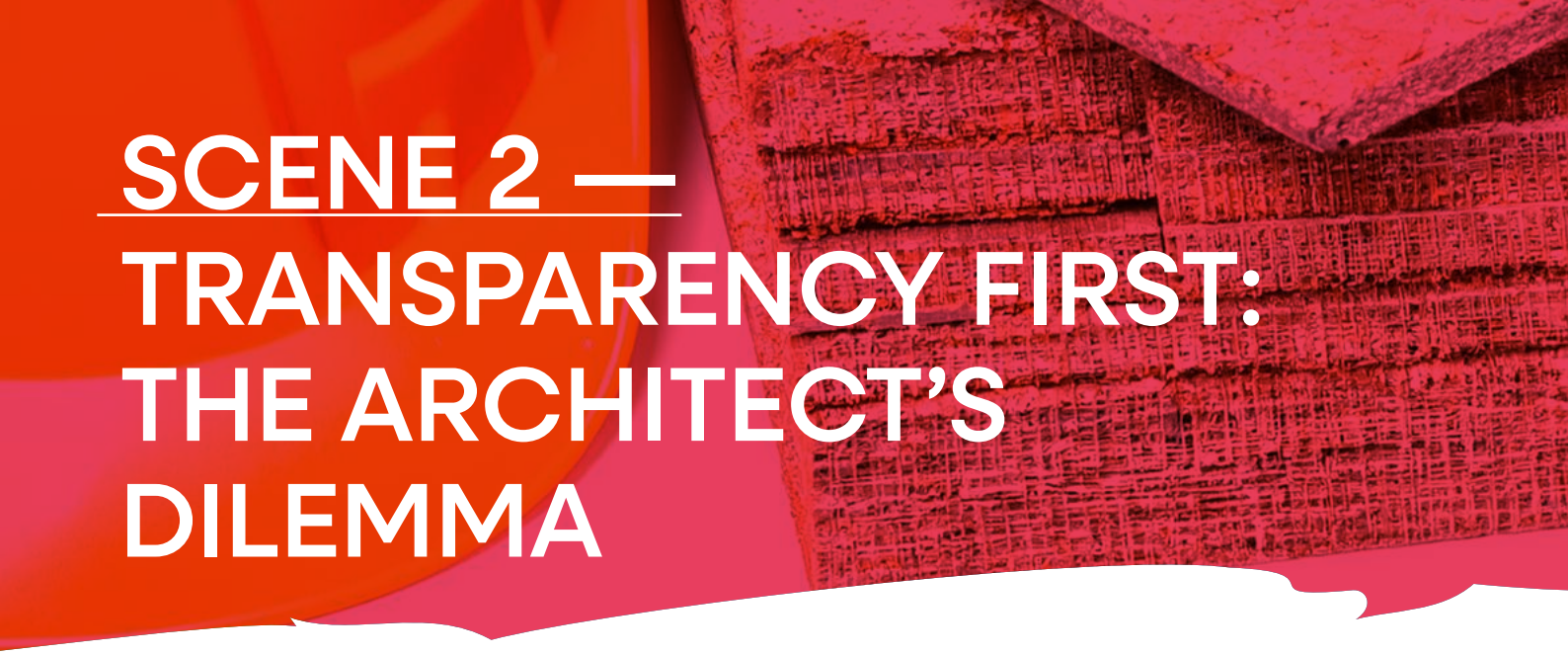


islative certainty, offers little comfort to a mayor facing immediate risks in buildings used daily by children, teachers, and local communities. The gap between regulatory timelines and municipal needs becomes stark.

Within his administration, discussions begin about future-proofing the city's building stock. If today's renovation uncovers hidden hazards, what might tomorrow reveal? How should future tenders be shaped to avoid repeating mistakes? And who within the municipal organisation holds the knowledge - or even the mandate - to ask for safer materials? These questions become the first steps toward a broader understanding: that managing hazardous substances is inseparable from achieving climate goals, advancing circularity, and ensuring the long-term resilience of public infrastructure.

Gradually, the mayor recognises that the problem before him is not a singular event but a systemic challenge that requires a new way of thinking. It demands collaboration between planners, architects, procurement officers, environmental specialists, and citizens. It requires cities to look beyond the immediate cost of materials and consider their entire lifespan: how they affect indoor environments, how they influence waste streams, and how they shape the possibilities for reuse.

Thus begins the NonHazCity journey: not with a dramatic crisis, but with a quiet moment of responsibility. A building in need of renewal becomes the catalyst for a deeper exploration of how cities can protect their residents, manage their resources wisely, and create spaces that are safe, future-oriented, and free from hidden chemical burdens. In addressing the mayor's problem, a much larger story unfolds - one that will guide architects, experts, policymakers, and communities through the unfolding chapters of this shared endeavour.



SCENE 2 — TRANSPARENCY FIRST: THE ARCHITECT'S DILEMMA

If the mayor's difficulty lies in recognising the scale of the problem, the architect's dilemma lies in navigating it. When the municipality turns to its design experts for guidance, they quickly discover that architecture is not only about aesthetics, structure, and function, but also about interpreting the invisible. An architect is expected to balance safety, energy performance, fire protection, accessibility, costs, climate impact, and circularity - yet the chemical content of materials, though critical to public health and long-term resilience, remains largely concealed.

In the early phases of planning, ambitions are set, visions are drafted, and technical frameworks begin to take shape. But architects often enter the process only after these ambitions have been formulated, leaving them little room to influence decisions that determine material choices. Even when they wish to prioritise chemical safety, they encounter a remarkably fragmented landscape of information. Product declarations may exist, but they differ in scope and format. Safety data sheets describe hazards, but not always the full composition. Environmental product declarations offer comparisons but rarely provide explicit guidance on toxicity.

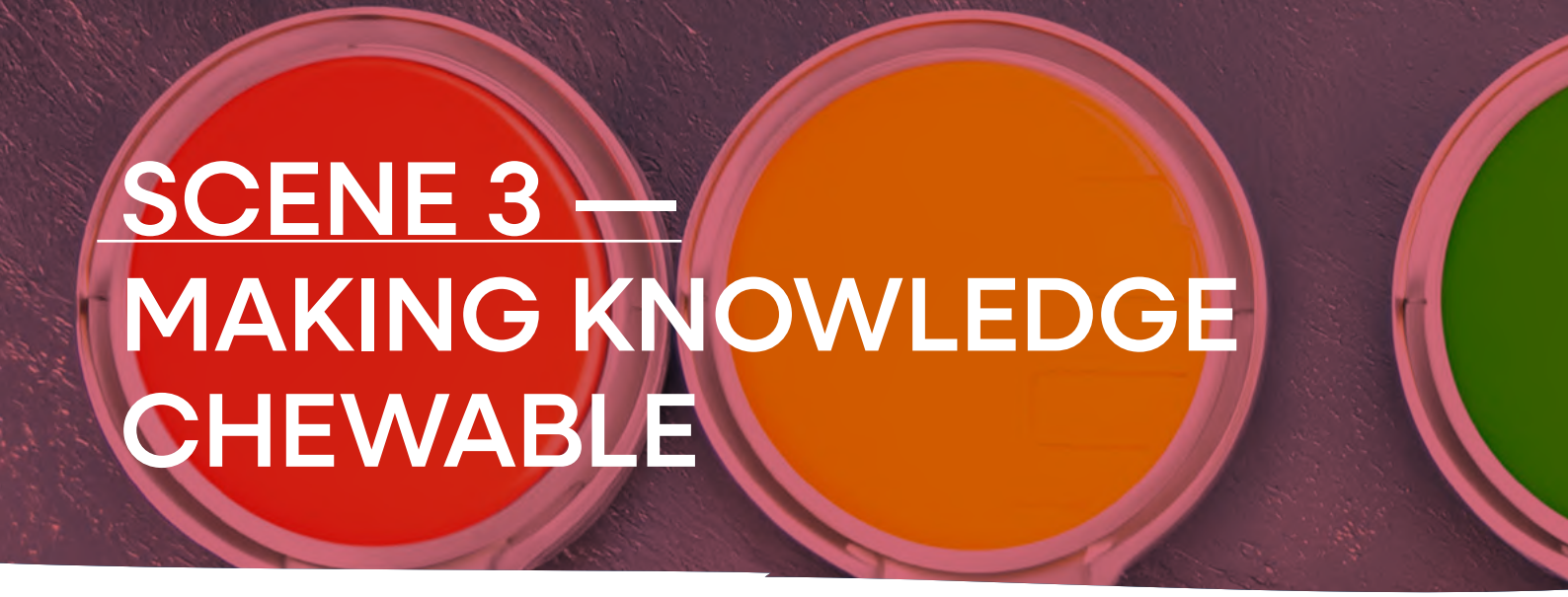
The architect's daily work is a choreography of details: load-bearing structures, moisture control, thermal performance, ventilation systems, and a host of regulatory requirements. Into this dense web, information about hazardous substances must somehow be woven - yet it is neither easily accessible nor intuitively understandable. Many professionals, even experienced ones, admit that the issue feels distant or overly specialised. Some assume that modern products must be safe simply because they are on the market; others believe that the age of asbestos-like surprises has passed. The reality, however, is more complex.

When confronted with this complexity, architects often feel that they lack the tools to act confidently. They may be aware of substance concerns in principle, but the practical question - "Which product should I choose?" - remains unanswered. Training helps, but only to a degree. Understanding how to interpret certificates, hazard symbols, or technical sheets does not resolve the deeper issue: the absence of a transparent, trustworthy system that reveals chemical content in a straightforward way.

Within NonHazCity3, the architectural teams explored how knowledge could become a genuinely supportive tool rather than an additional burden. They examined pilot projects where even small renovations revealed how little information was available at the outset. They discussed whether material assessments should be required in permit processes, only to recognise that additional bureaucracy was neither feasible nor desirable. Instead, the idea of simplification emerged: a method that translates complexity into clear, actionable guidance.

For architects, transparency is not merely a matter of data; it is a precondition for good design. Without knowing what materials contain, they cannot take responsibility for the long-term health of buildings or the people who inhabit them. The dilemma is therefore both technical and ethical. How can one design for a safe future when the information needed to do so remains elusive?

And yet, through the shared work of the project, the contours of a solution begin to appear. Better tools, clearer communication, and a more coherent system of expectations can transform the architect's dilemma from an obstacle into an opportunity. The story of NonHazCity continues with the exploration of how knowledge - once made accessible and "chewable" - becomes a driver of change rather than a source of frustration.



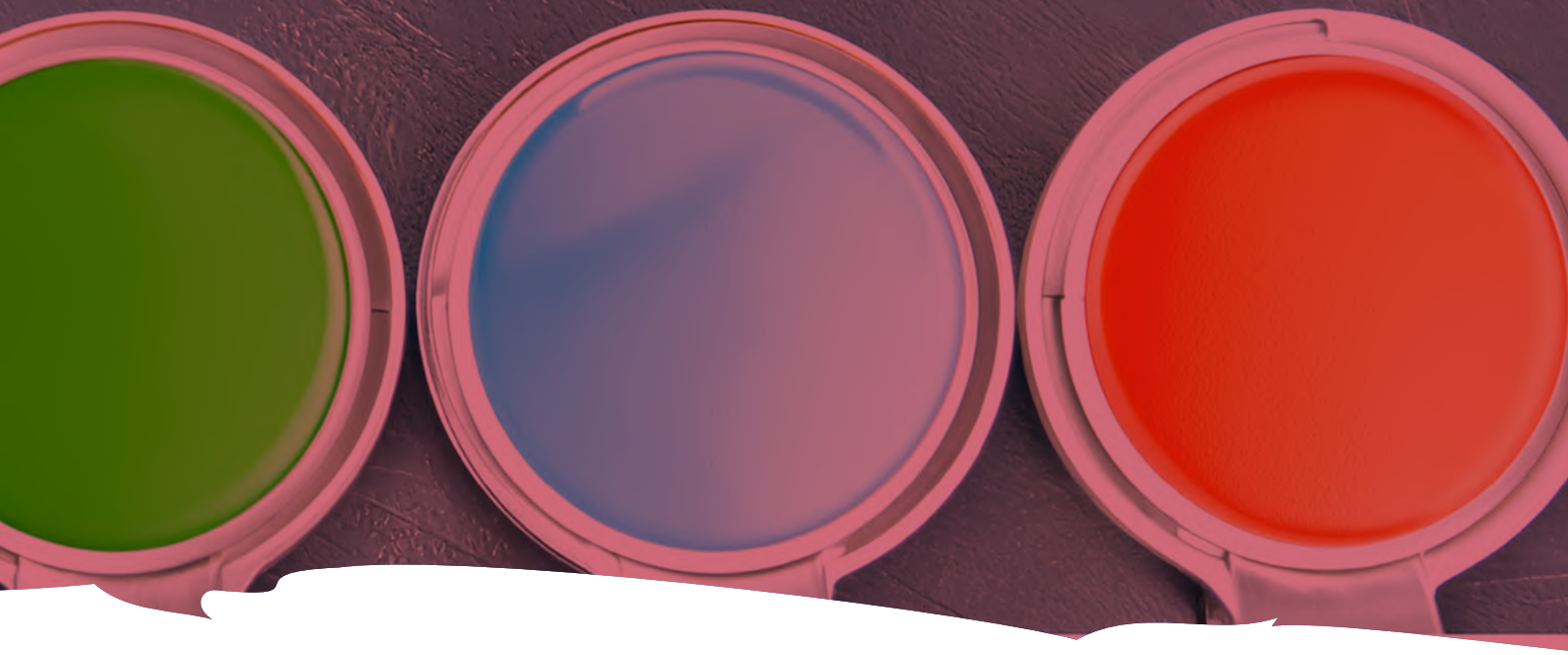
SCENE 3 — MAKING KNOWLEDGE CHEWABLE

As the work of NonHazCity3 progressed, it became increasingly clear that transparency alone is not enough. Even when information exists, it must be presented in a form that decision-makers, project developers, and municipal officers can actually use. Complex data about hazardous substances, scientific classifications or technical safety sheets rarely translate into everyday practice. The challenge, therefore, was not merely to expose what lies within construction materials, but to turn this knowledge into something digestible - something that can guide choices without overwhelming those who must make them.

This recognition marked a turning point in the project. Knowledge had to be transformed into a tool, not a barrier. It needed to be translated from specialist language into clear signals that support decisions at the right moment. Within this context the idea of simplification emerged: a way to convey essential information at a glance while still allowing experts to go deeper when necessary. The concept resembled the logic of a traffic light - intuitive, universally understood, and capable of guiding action quickly. Red materials indicate concern and the need for avoidance, yellow points to acceptable but cautious use, and green signals safer choices. The system does not replace professional judgment, but it provides a first orientation that makes complexity manageable.

Such simplification was not intended to reduce the importance of scientific detail. It was developed to bridge the gap between specialists who understand chemical behaviour and practitioners who must choose between one material and another under the pressure of timelines, budgets and regulatory demands. In municipalities where many responsibilities converge - procurement, planning, maintenance, sustainability, finance - a shared, simple language becomes essential. It allows different actors to understand the implications of their choices without requiring each of them to become an expert.

The experience of the project partners demonstrated that this approach works. When materials are categorised in an accessible way, awareness grows naturally. Teams begin to ask new questions and challenge old assumptions. Project leaders understand more clearly why certain requirements matter, and contractors recognise that safer materials are not merely an administrative preference but a tangible contribution to



healthier buildings. Even political leaders, often distant from technical debates, can communicate clearly about goals when supported by simple, credible tools.

Simplification also builds trust. Where information is presented openly and consistently, municipalities and suppliers can develop more constructive dialogue. It becomes easier to justify choices, explain costs, and show progress. In several pilot cities, this clarity helped move discussions from abstract concerns about hazardous substances to concrete, solution-oriented planning. Over time, a simplified system contributes not only to better decisions but to a shift in culture - one in which chemical safety becomes a normal, integrated part of building practice.

In this sense, making knowledge “chewable” is not about diminishing complexity; it is about making it actionable. It turns a hidden and often intimidating issue into something that can be addressed through everyday decisions. It empowers municipalities, architects and contractors to work towards a shared goal with confidence and coherence. The NonHazCity3 story continues by showing how such clarity enables the next step: moving from strategic intentions to practical, effective solutions.

SCENE 4 — FROM STRATEGY TO PRACTICE

Once knowledge becomes accessible, the question inevitably follows: how can it be put into practice? Municipalities, architects, builders and citizens all work within constraints - financial, regulatory, organisational - and translating strategic ambitions into tangible outcomes is rarely a straight path. In NonHazCity3, this transition from understanding the problem to implementing solutions became a defining element of the project. It required not only tools but also courage, cooperation and the willingness to rethink established ways of working.

The project developed a range of solutions tailored to different actors. Municipalities, as owners and managers of public buildings, were offered a strategic framework that connected chemical safety with circularity and climate goals. This three-pillar approach encouraged cities to see construction not as a series of isolated technical tasks but as an integrated process shaped by long-term responsibilities. For professionals, the project provided practical guides that addressed questions arising during design and construction: how to choose materials, how to interpret data, how to identify “hot spots” where hazardous substances are most likely to appear.

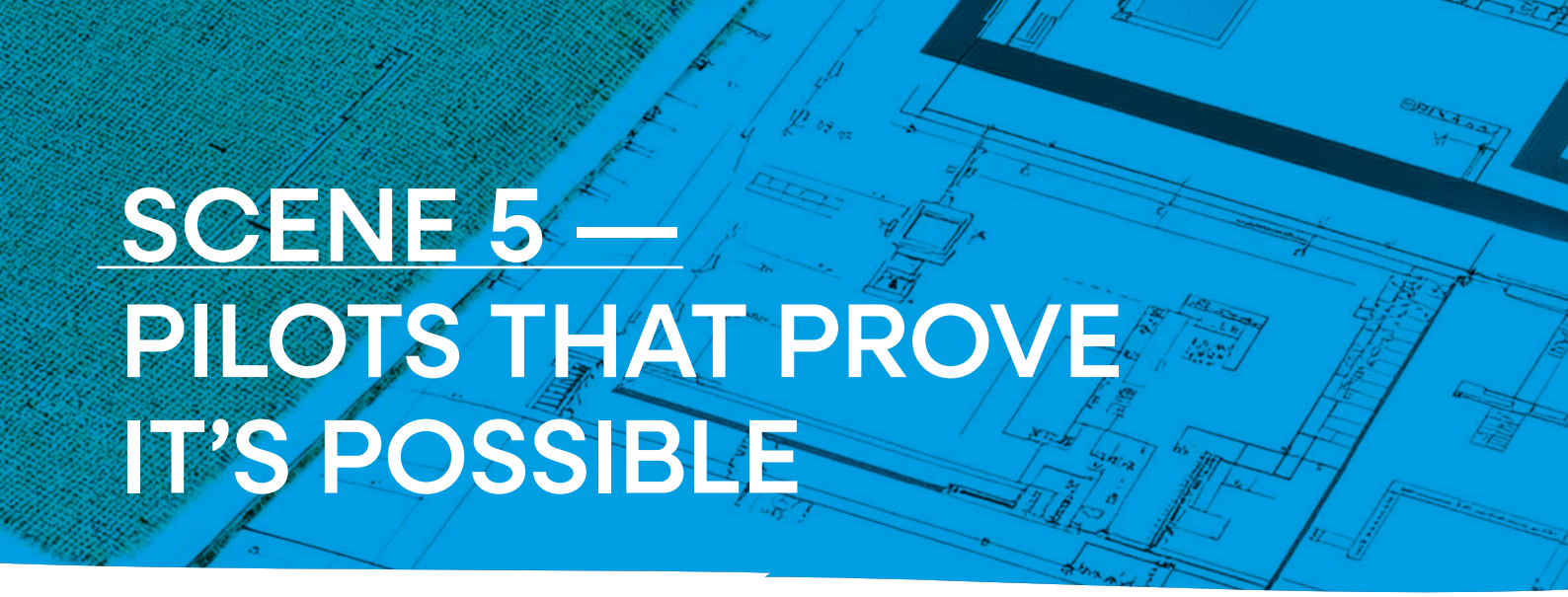
The strength of these solutions lay not in their novelty but in their coherence. They bridged different sectors of municipal work, linked scientific insights with administrative procedures, and gave structure to what had previously appeared fragmented. Yet they also revealed weaknesses. Implementation depended on political will, technical expertise and market conditions. In some cases, municipalities had to balance ambition with real-life constraints: limited budgets, lack of local data, or resistance from contractors unfamiliar with new requirements. The project did not shy away from these challenges; instead, it encouraged open discussion of what worked well and what required further refinement.

Piloting the solutions in real settings proved essential. When cities tested the procurement framework, they discovered how quickly internal resistance could soften once benefits became visible. When professionals applied green building certificates or ecolabels, they learned how such systems could guide not only material choices but also communication with stakeholders. When teams engaged in market dialogue, they realised that suppliers respond differently depending on how clear, credible and coordinated the municipal demand is.

Equally important were the practical instructions developed for municipal staff. These step-by-step guides translated high-level goals into manageable actions: setting criteria, preparing tenders, selecting materials, monitoring progress and documenting results. By making the process more transparent and predictable, the guides helped build confidence among users who might otherwise feel overwhelmed by technical complexity. They also reinforced the idea that change is not achieved through singular heroic efforts, but through small, consistent steps supported by institutional routines.

Perhaps the most striking lesson was that success depends on collaboration. Strategic solutions create direction, but practical results require many hands. In some municipalities, sustainability officers and construction specialists found themselves working together more closely than before. In others, political leaders discovered that embracing safer materials aligned naturally with their climate and health agendas. Even challenges - such as higher upfront costs or limited market offerings - became opportunities to initiate broader conversations about long-term value and risk reduction.

By bringing strategies into everyday practice, NonHazCity3 demonstrated that ambition and feasibility need not be opposites. When clear frameworks, practical tools and supportive partnerships are in place, chemical-smart construction becomes not an exception but a realistic, forward-looking approach. The next scene shows how these ideas took shape in the pilot projects - real buildings, real constraints, and real progress towards a toxfree, circular and climate-friendly future.



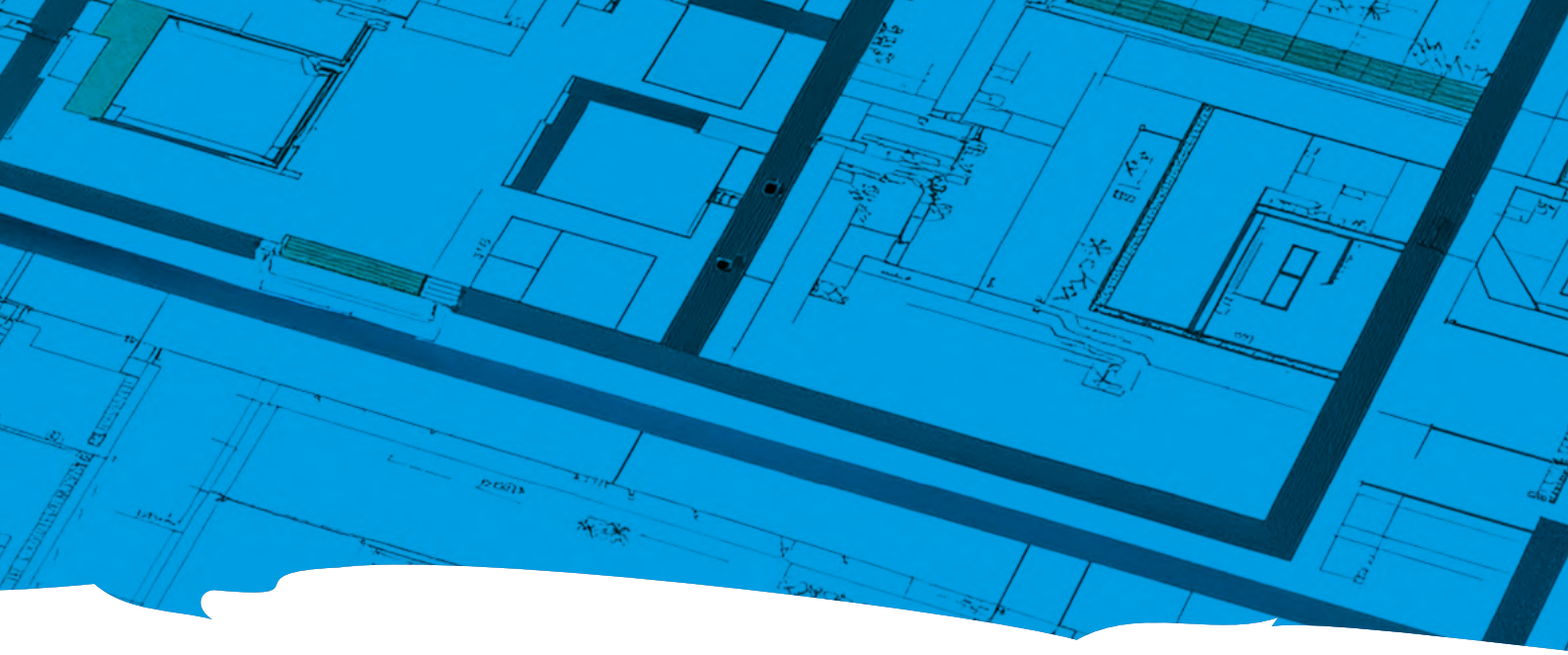
SCENE 5 — PILOTS THAT PROVE IT'S POSSIBLE

The true test of any strategy lies not in plans or policies but in the realities of buildings, budgets and human interactions. Across the Baltic Sea Region, the NonHazCity3 pilot projects became living laboratories where new ideas met old structures, and where the ambition for tox-free, circular and climate-friendly construction encountered the practical constraints of daily decision-making. Despite differing contexts, each pilot shared a common purpose: to show that healthier and more sustainable building practices are not theoretical ideals, but achievable steps towards a better built environment.

In Hamburg, a parish house became the starting point for a quiet transformation. What began as a modest renovation opened a wider conversation about the chemicals embedded in materials and the long-term implications for the community using the space. Architects and parish leaders explored how even a limited intervention - such as renewing a roof or improving energy performance - could incorporate safer materials and circular approaches. The process revealed challenges: products that met both environmental and technical standards were not always readily available, and balancing aspirations with budget constraints required determination. Yet the pilot also sparked awareness. The parish council began to reflect more deeply on what "non-toxic" construction meant, and ordinary parishioners developed an interest in choices that would influence the atmosphere of their future gatherings. A seemingly simple project thus became a catalyst for cultural change.

In Riga, the renovation of a social apartment for a large family offered a different perspective. Here, financial limitations were unavoidable, and the municipality worked within a strict budget while trying to integrate healthier materials and circular principles. The pilot demonstrated that even under such constraints, improvement is possible. By selecting eco-labelled paints, better windows and durable flooring, the team succeeded in creating a healthier home environment and a replicable model for future social housing upgrades. The experience also highlighted the importance of people. A single estimator willing to embrace innovation can shift an entire project's direction, proving that institutional change often begins with individual commitment.

Tallinn's new kindergarten showed what can be achieved when sustainability criteria are embedded early in the planning process. Rather than prescribing detailed technical solutions, the municipality set broad goals related to climate-friendliness, circularity and chemical safety. This openness encouraged architects to explore creative ideas, such as modular structures, natural landscaping and the reuse of existing elements. For many involved, discussions about chemical safety and material choices were new,



yet the collaborative environment enabled them to gain confidence and develop shared understanding. The kindergarten became a blueprint for how municipalities can combine ambition with practicality to shape healthier learning spaces for children.

In Västerås and Stockholm, the pilots built upon long-standing experience with certification systems and material assessment tools. Västerås emphasised strong cooperation between construction companies, architects and municipal teams, demonstrating how mutual commitment can elevate standards. In Stockholm, the focus on indoor air quality and the use of well-established criteria created clarity for contractors and reassurance for residents. Both cities showed that reliable routines, transparent documentation and clear expectations are powerful drivers of quality.

Holbæk added to this mosaic through its kindergarten certified under the DGNB system. Although the certification placed less emphasis on hazardous substances than some other frameworks, the pilot team compensated by conducting thorough checks using additional tools. This effort underscored the importance of aligning certification with practical material verification and illustrated how municipalities can strengthen existing systems to achieve higher levels of safety.

Taken together, the pilots tell a coherent story: change is possible when solutions are adapted to local context, when stakeholders engage in honest dialogue and when municipalities are willing to learn from setbacks as well as successes. Each project stands as one blossom in a colourful bouquet — different in shape, scale and starting point, yet all pointing towards a future in which buildings support well-being, minimise environmental impacts and remain resilient throughout their lifecycle.

SCENE 6 — PEOPLE & HOMES MATTER TOO

While public buildings often shape the political debate, it is within private homes that most people experience the built environment - and where exposure to hazardous substances is often highest. Homes are intimate spaces, shaped by personal choices, inherited structures and the practicalities of everyday life. Renovations are driven by the desire for comfort, beauty or functionality, yet few households consider what chemicals may be present in paints, sealants, flooring or furniture. In this sense, people's homes mirror the broader challenge faced by municipalities: decisions are made with limited information, and the consequences often remain invisible.

NonHazCity3 worked directly with families carrying out renovations, and these encounters revealed how easily hazardous substances slip into everyday life. Residents would hold two tins of paint, unable to distinguish which might contain problematic preservatives. They would browse flooring options without realising how surface treatments influence indoor air. Some assumed that anything sold in a shop must be safe; others felt overwhelmed by the sheer effort required to understand chemical labels. Yet, despite this complexity, many were eager to make healthier choices once provided with clear, trustworthy guidance.

Engaging households required a different communication approach from that used with professionals. People wanted to know whether a decision would affect their children, their pets, their sleep or their long-term health. They responded not to abstract chemical classifications but to practical, relatable information: which materials are more durable, which contribute to better indoor air, which options reduce future waste. Messages that linked safer choices to well-being and comfort resonated strongly, and personal stories from renovation pilots helped bridge the gap between expert knowledge and daily life.

The pilots also revealed the delicate balance between aspiration and reality. Households often encountered higher prices for eco-friendlier materials, limited availability in local shops or uncertainty about how to interpret certifications. They faced compromises between aesthetics, practicality and sustainability. Yet they demonstrated considerable resilience and creativity: comparing long-term value instead of short-term cost, seeking advice from local craftspeople, or prioritising materials that combined safety with durability. These experiences emphasised that progress does not require perfection; it begins when people feel empowered to take small, informed steps.

Public communication became a crucial element of this work. Campaigns developed within the project translated expert content into simple, engaging messages tailored to social media. Short videos, myth-busting posts, seasonal tips and long-reads supported by science helped residents understand how everyday actions connect to wider environmental goals. By repeating key messages and linking them to familiar situations - from spring cleaning to kitchen refurbishments - the campaign gradually brought the topic of construction chemicals into the mainstream of home-improvement conversations.

The lessons were clear. People do not need to become experts to make safer choices, but they do need accessible information, reassurance and reliable guidance. They respond to honesty, to humour, and to the sense that others face similar dilemmas. They appreciate learning from real renovation stories, both the successes and the frustrations. Ultimately, the pilot experiences showed that households are not passive recipients of policy but active participants in shaping healthier living environments.

In recognising the importance of homes, NonHazCity3 expanded the horizon of its work. The project demonstrated that chemical-smart construction is not only a municipal responsibility or an architectural challenge; it is also a personal endeavour rooted in care for one's family and community. When people are equipped with clear messages and practical tools, their choices ripple outward - influencing markets, guiding retailers, and reinforcing municipal ambitions. As the story continues, it becomes evident that this shared effort between households, cities and professionals is essential for building a toxfree future.

SCENE 7 — THE PROCESS FOR CONTROLLING CHANGE

As municipalities and households began adopting healthier material choices, one realisation became inescapable: even the best criteria and intentions achieve little without consistent supervision. Construction sites are dynamic places, shaped by shifting responsibilities, tight schedules and the practical knowledge of workers. Materials are ordered, substituted, installed and occasionally discarded at great speed. In this environment, the presence of hazardous substances often becomes visible only when a project is complete - and by then it is too late to make meaningful corrections. NonHazCity3 therefore turned its attention to one of the most decisive elements of chemical-smart construction: the control of change.

Experience from Stockholm illustrated this need particularly clearly. For years, the city had strong policies, good guidance, trained staff and access to material assessment systems. Yet, despite this solid foundation, the results were inconsistent. Policy documents alone could not guarantee that safer materials were actually used on site. Responsibilities were divided, incentives were unclear, and everyday routines often overshadowed long-term environmental goals. It became evident that successful implementation required not only rules but also the possibility to verify compliance and to support teams through dialogue and problem-solving.

Supervision in this context is not a punitive measure but a practical tool. It begins with recognising that workers and contractors are central actors in achieving chemical safety. They need to understand why certain materials matter, how substitutions affect health and performance, and what their role is in meeting municipal expectations. Regular site meetings, open discussions and hands-on support become essential components of this work. Over time, such engagement builds competence, reduces misunderstandings and fosters a shared sense of purpose.

Certification systems emerged as another important element. By requiring documentation and independent verification, they provide a structured framework that clarifies expectations and responsibilities. Certification introduces a form of “hard incentive”: compliance becomes part of fulfilling the contract, and the project’s success is judged not only by its appearance or energy performance but also by the quality of its material choices. While certification can involve additional costs and labour, the benefits are substantial. It strengthens quality assurance, creates transparency and embeds chemical considerations into the broader sustainability agenda.

Yet supervision is not merely a matter of administrative checks. It is also about cultivating the right project culture. Teams work more effectively when goals are realistic, communication is respectful and positive feedback is offered when progress is made. Small acknowledgements reinforce good practice, while early conversations about potential issues prevent costly corrections later. This incremental approach - improving processes step by step - aligns well with the broader NonHazCity philosophy: meaningful change is achieved not through sudden leaps but through steady, intelligent refinement.

One of the most valuable insights from this work is that people build houses, not policies. When workers, supervisors, architects and municipal staff understand their shared role in protecting health and the environment, responsibilities become clearer and cooperation strengthens. Supervision transforms from a burden into a supportive structure that helps everyone achieve better outcomes. It gives municipalities confidence that their requirements are respected, and it provides contractors with clarity and guidance.

By establishing routines for supervision and embracing certification as a tool for control, cities begin to close the gap between intention and reality. The process of controlling change becomes an engine that accelerates learning, reduces risk and ensures that healthier, safer and more sustainable materials truly enter the buildings where people live and work. With this foundation in place, the story now turns towards the future - a vision of cities that are not only safer today but prepared for the challenges and opportunities of the decades ahead.

SCENE 8 — THE FUTURE CITY

Looking ahead, the work of NonHazCity3 invites us to imagine a city not defined by what it must repair, but by what it chooses to become. The "Future City" is not a distant ideal, but a direction shaped by today's decisions. It is a place where climate neutrality, circularity, affordability and chemical safety are treated not as competing priorities but as interconnected elements of a healthier urban fabric. In this vision, buildings no longer carry hidden risks, and the materials they are made from remain assets rather than liabilities throughout their life cycle.

In the Future City, the building stock has been renewed through thoughtful planning and steady renovation. Homes, schools and public facilities are constructed or upgraded with materials that support good indoor air quality and reduce environmental impacts. Energy systems rely on sustainable sources, improving both resilience and affordability. Circular design principles ensure that structures can be adapted, dismantled or repurposed without releasing harmful substances into the environment. What once required specialised knowledge becomes standard practice because the systems supporting it - guidelines, data tools, digital documentation and procurement criteria - are firmly in place.

This future also embodies the European ambition of achieving zero pollution. Air, water and soil are protected at levels that safeguard human health and allow ecosystems to thrive. Hazardous substances are not simply restricted but gradually designed out of materials and processes. The city becomes a partner to the environment rather than a source of long-term contamination. Such progress is neither accidental nor immediate; it emerges from consistent efforts to make better choices today, supported by transparent information and shared responsibility across sectors.

To understand how this future might unfold, NonHazCity3 explored a backward trajectory from 2050 to the present. In this narrative, change begins when architects, citizens and municipalities form a broad movement demanding safer, healthier buildings. Their enthusiasm accelerates political momentum, fostering new legislation and motivating industry to innovate. Digital product passports provide complete information on chemical content, allowing buyers to make informed decisions and ensuring accountability throughout supply chains. A new digital tool, inspired by the Swedish BVB system, becomes widely used across Europe, making chemical assessments a routine part of material selection.

As momentum grows, Baltic Sea Region cities take the lead by introducing binding criteria for hazardous substances in public procurement. This regional coherence encourages the European Union to establish minimum requirements for construction products, aligning national markets and elevating standards. By the early 2030s, chemical safety becomes an integral part of European building culture, supporting cities in their transition towards a sustainable, circular and climate-neutral future.

The Future City also aligns naturally with broader initiatives such as the New European Bauhaus, which emphasises sustainability, beauty and inclusiveness in the built environment. This connection underscores that healthier buildings are not only technical achievements but cultural ones. They reflect values of care, aesthetic quality and community well-being. Even small municipalities can participate in this transformation, benefiting from tools and guidance that make advanced solutions accessible.

Seen from today's perspective, the Future City may appear ambitious, yet the foundations are already being laid. Each pilot project, each new guideline, each refinement in supervision or procurement represents a step along this trajectory. Progress is made not through grand gestures but through persistent, consistent improvement. The work of NonHazCity3 shows that when knowledge is transparent, solutions are practical and cooperation is strong, a toxfree future is not an aspiration but an emerging reality.

With this vision in mind, the narrative turns to those who have witnessed this journey over many years - the experts whose reflections offer perspective, encouragement and direction for what comes next.

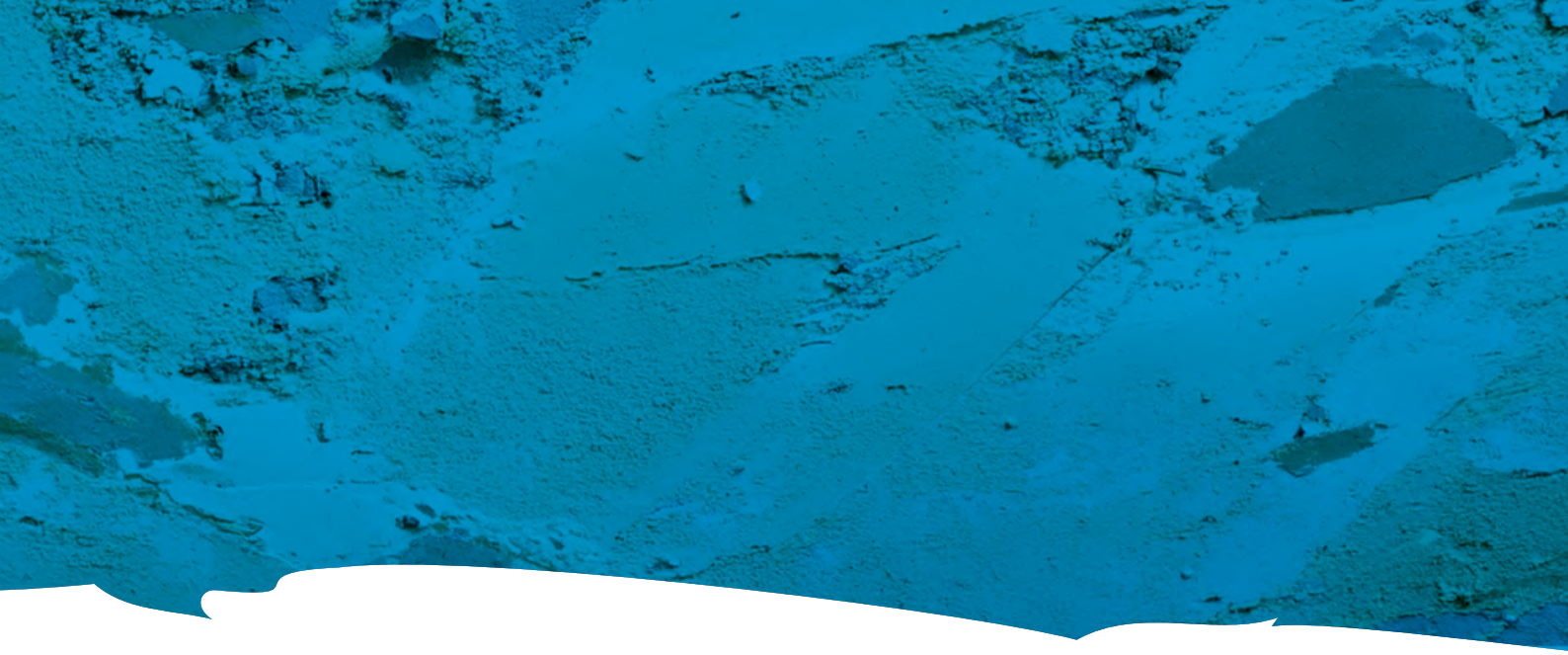
SCENE 9 — EXPERT REFLECTIONS

As the project's journey approached its close, three long-standing observers of the Baltic Sea Region's environmental work were invited to reflect on what NonHazCity3 had achieved and what still lies ahead: Esa Nikunen, former Director of Helsinki Environmental Services; Professor Martyn Futter of the Swedish University of Agricultural Sciences; and Andreas Ahrens, Senior Consultant in Chemicals Policy at the Baltic Environmental Forum. Their perspectives offered a grounding counterpoint to the project's optimism, acknowledging both the progress made and the structural barriers that continue to shape the field. Together, they provided a wider context in which the work on hazardous substances in construction can be understood, evaluated and taken forward.

The experts agreed that one of the project's most significant contributions has been its ability to translate highly complex scientific and regulatory issues into clear and operational guidance. They highlighted that hazardous substances in construction materials remain largely invisible to the public and often under-recognised by professionals. The ability of NonHazCity3 to make the issue accessible - without oversimplifying it - was described as an important achievement. The project's work with categorisation systems and intuitive communication tools demonstrated that clarity is possible even in a field characterised by dense data and technical uncertainty.

A recurring theme in their reflections was the role of municipalities as drivers of change. Large cities in particular possess purchasing power and institutional capacity that can influence markets more rapidly than high-level legislation. The experts noted that while EU and national regulations remain essential, they evolve slowly and are increasingly subject to political pressures. In contrast, municipalities can act proactively by integrating chemical safety into procurement, design frameworks and building supervision. When several cities articulate coherent expectations, suppliers respond; when they do not, the market stays unchanged. In their view, the project helped demonstrate how municipal leadership can create practical pathways for improvement.

The panel also acknowledged, however, that hazardous substances in construction rarely gain political visibility. The sector is technically oriented, culturally conservative and shaped by long-standing professional routines. Chemical content is easily overshadowed by other priorities such as cost, energy performance or aesthetics. The experts recognised that environmental organisations have historically focused far more on chemicals in consumer products, food contact materials or cosmetics than on construction. As a result, the issue has not had the advocacy energy that might elevate it in public debate. Changing this dynamic, they argued, requires persistent



communication and the gradual establishment of a shared language between environmental specialists and construction professionals.

The discussion touched on challenges related to transferring best practices across borders. The Swedish material assessment system was acknowledged as highly effective, but its success rests on a specific combination of cultural awareness, supplier engagement and long-term investment. These foundations cannot be reproduced quickly or uniformly across the Baltic Sea Region. Nevertheless, the underlying principles - transparency, clear criteria and practical verification - were seen as broadly transferrable. The experts encouraged countries and cities to move towards alignment rather than uniformity, building their own systems while learning from others.

Communication emerged as an area requiring further attention. The panellists emphasised that effective messaging must be tailored to different audiences: detailed information for regulators, practical guidance for professionals, and simple, confidence-building messages for households. They highlighted the risk of overwhelming the public with fear or excessive technical detail. Instead, communication should focus on enabling informed decisions and encouraging retailers and suppliers to provide better information. The project's experiments with public outreach were seen as valuable steps in this direction.

Finally, the experts reflected on the long-term implications of the project's work. They noted that buildings are durable structures, and the chemical decisions made today will shape indoor environments, waste flows and environmental impacts for decades. In this sense, the project's efforts represent not only an environmental initiative but also an investment in public health, climate resilience and future-proofed urban development. They considered the integration of chemical safety with circular construction particularly important, as safer material choices determine whether reuse and recycling can deliver true environmental benefits.

In closing, the experts characterised NonHazCity3 as a project that successfully connected science, policy and practice in a field that rarely receives coherent attention. Its methods, pilots and tools have demonstrated that municipalities can take meaningful action even in the absence of complete data or fully harmonised regulation. They encouraged continued cooperation across cities and regions, emphasising that the momentum generated by the project should be sustained and expanded. Their reflections brought the narrative full circle, showing that while the problem remains complex, the direction is clear - and the foundations for a toxfree future have been firmly laid.

Executive Summary

NonHazCity3 set out to address a widely overlooked but critically important issue: the presence of hazardous substances in construction materials and the implications this has for public health, circularity and long-term municipal resilience. Across the Baltic Sea Region, the project demonstrated that chemical safety in buildings is not an abstract regulatory concern but a practical challenge that affects cities, households and the environment every day.

The narrative of the project follows a clear logic. It begins with the recognition that many municipalities face unexpected costs and risks when harmful substances are discovered in their buildings. These substances, both legacy and newly introduced, remain largely invisible during planning and maintenance, and the information available to cities is fragmented or difficult to interpret. This creates a structural knowledge gap that undermines the ability of local authorities to manage their assets safely and sustainably.

Architects and planners face similar challenges. Even when they wish to prioritise chemical safety, they often lack accessible and reliable tools to guide material choices. This highlighted the project's first major task: transforming complex chemical information into simple, actionable guidance. Through intuitive "traffic-light" categorisation and clearer communication methods, NonHazCity3 made it possible for decision-makers to understand the implications of different materials without requiring specialist expertise.

The project then moved from strategy to application. Municipalities and partners developed practical frameworks for procurement, design and supervision. These were tested in a range of pilot projects — from parish houses and social housing to kindergartens and certified public buildings — demonstrating that healthier, safer and more circular construction is both feasible and cost-effective when supported by coherent routines and collaboration across professional roles. Each pilot illustrated a different aspect of the transition: the importance of involving contractors early, the value of ecolabels for political communication, the need to combine certification with material verification, and the benefits of cross-sector cooperation within city administrations.

NonHazCity3 also brought hazardous substances into the domestic sphere. Work with households showed that residents are willing to make safer choices when provided with clear and trustworthy information. The project's communication work emphasised positive, practical messaging that empowers people rather than alarming them, strengthening the link between personal decisions and wider urban sustainability.

Supervision emerged as a decisive factor for success. Policies and criteria matter, but they only become effective when supported by ongoing dialogue, documentation and quality control on construction sites. Certification systems and municipal oversight help ensure that material choices align with long-term environmental goals and reduce the risk of future liabilities.

Looking ahead, the project articulated a vision of a "Future City" where chemical safety forms part of a coherent approach to climate mitigation, circularity and zero pollution. This future is built step by step through municipal leadership, improved market transparency, digital tools and harmonised criteria. The project demonstrated that meaningful progress is possible even before regulatory frameworks fully catch up.

Finally, reflections from senior experts reinforced the importance of simplifying complexity, mobilising municipal purchasing power and strengthening cross-sector dialogue. They acknowledged that hazardous substances in construction have long lacked political attention, yet recognised that NonHazCity3 has successfully elevated the topic and provided a practical foundation for continued work.

Together, the insights of NonHazCity3 offer a clear message: building a toxfree future requires transparency, consistency and cooperation. With the tools, pilots and frameworks developed, municipalities across the Baltic Sea Region are now better equipped to lead this transition and protect both people and the environment for decades to come.